SPORTON LAB.

Project No : FD782806

VERIFICATION OF COMPLIANCE

- **Equipment** : **Rugged Tablet Vehicle Docking**
- **Model No.** : **xRDS-241Vx (x - Where x may be any combination of alphanumeric characters or "-" or blank.)**
- **Applicant** : **AAEON Technology Inc.**
  5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C.

SPORTON LAB.

I HEREBY DECLARE THAT :

The equipment is in accordance with the procedures are given in **ANSI C63.4-2014** and the energy emitted by this equipment was **Passed CISPR PUB. 22** and **FCC Part 15 Subpart B** in both radiated and conducted emissions **Class B** limits. The test was carried out on **Sep. 08, 2017** at **SPORTON INTERNATIONAL INC.** LAB.

William Li
Supervisor

FCC TEST REPORT

Authorized under **D**eclaration **o**f **C**onformity

Test Standard : 47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device

Filing Type : Declaration of Conformity

Equipment : Rugged Tablet Vehicle Docking

Model No. : xRDS-241Vx (x - Where x may be any combination of alphanumeric characters or "-" or blank.)

Applicant : AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C.

Manufacturer : AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C.

Statement:

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by TAF or any agency of U.S. government.

Issued by : **SPORTON International Inc.**
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Issue Date	Description
FD782806	Rev.01	Sep. 14, 2017	Initial issue of report
FD782806	Rev.02	Oct. 26, 2017	The EUT change DC jack connector and update photographs of EUT.

Verification No. : FD782806

VERIFICATION OF COMPLIANCE

Test Standard : 47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device

Equipment : Rugged Tablet Vehicle Docking

Trade Name : AAEON

Model No. : xRDS-241Vx (x - Where x may be any combination of alphanumeric characters or "-" or blank.)

Applicant : AAEON Technology Inc.
5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C.

Received Date : Sep. 06, 2017

Final Tested Date : Sep. 08, 2017

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2014** and the energy emitted by this equipment was ***passed*** **FCC Part 15 Subpart B.** The equipment was ***passed*** the test performed according to above standard list.

William Li / Supervisor

Testing Laboratory
1190

SPORTON International Inc.
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

SUMMARY OF TEST RESULT

Emission Tests and Conformance Test Specifications			
Report Clause	**Test items**	**Test Standard**	**Result**
4	Conducted Emissions of Powerline	ANSI C63.4:2014 with FCC Method 47 CFR Part 15, Subpart B, Class B Digital Device	Complied
5.1	Radiated Emissions below 1GHz		Complied
5.2	Radiated Emissions above 1GHz		Note 1
Note 1: The highest frequency of the internal sources of the EUT is less than 108MHz, so the measurement shall only be made up to 1GHz.			

1. General Description of Equipment under Test

1.1. Basic Description of Equipment under Test

Equipment	:	Rugged Tablet Vehicle Docking
Model No.	:	xRDS-241Vx (x - Where x may be any combination of alphanumeric characters or "-" or blank.)
Power Supply Type	:	From Adapter(Switching)
AC Power Cord	:	Non-Shielded, 1.8 m, 3 pin
DC Power Cable	:	Non-Shielded, 1.5 m, 5 pin

The maximum operating frequency : 25 MHz

1.2. Feature of Equipment under Test

Accessories

Item	Brand	Model	Spec. Description
AC Adapter	FSP	FSP090-DIEBN2	I/P: 100 - 240Vac, 1.5 A, O/P: 19 Vdc, 4.74 A AC: 1.8 meter, Non-Shielded cable, w/o ferrite core DC: 1.5 meter, Non-Shielded cable, with one ferrite core

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Modification of EUT

Please refer to the applicant solution information and photographs of EUT.

2. Test Configuration of Equipment under Test

2.1. Test Manner

Test Items	Description of test modes
Conducted Emission	Mode 1. LAN 1Gbps, USB3.0 R/W+ Adapter
Radiated Emissions <below 1GHz>	Mode 1. LAN 1Gbps, USB3.0 R/W+ Adapter

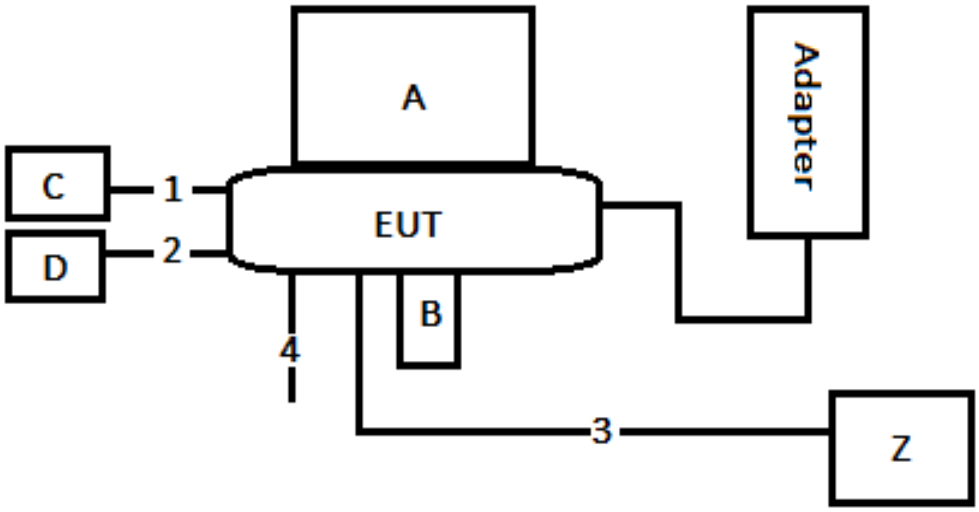
2.2. Description of Test System

Conducted emission and radiated emission below 1GHz

No.	Peripheral	Manufacturer	Model Number	FCC ID	Remarks
For Local					
A	Tablet Computer	AAEON	RTC-1200	N/A	Client Provided
B	USB 3.0 Flash Disk*2	PQI	U821V	DoC	-
C	Mouse	Microsoft	1113	DoC	-
D	Keyboard	Microsoft	1366	DoC	-
For Remote					
Z	Notebook	DELL	E5430	DoC	-

2.3. Connection Diagram of Test System

Test Setup Diagram



No.	Types of Cables	Shielding on Cable	Length (m)	Remarks
1	USB Cable	AL-F-Shielded	1.8	-
2	USB Cable	AL-F-Shielded	2.0	-
3	RJ45 Cable	Non-Shielded	10.0	Remote
4	RS232 to RJ45 Cables*2	Non-Shielded	1.8	Setting

2.4. Test Software

During testing, the following program under Win 10(Tablet Computer) and Win 7(Remote) were executed:

- The Notebook (Remote) executed "Ping.exe" to link with EUT to maintain the connection via RJ45 cable.
- The EUT performs continuous charging of the Tablet Computer.
- The Tablet Computer executed "Burn-in test" to runs support units.
- The Tablet Computer executed "Winthrax.exe" to read and write data from EUT and USB3.0 Flash Disk.
- The Tablet Computer executed "Burn-in test" to sends "H" messages to the monitor, and the monitor displays "H" patterns on the screen.

Note: The RS232 port only for engineering setting.

3. General Information of Test

3.1. Test Facilities

Test Site：SPORTON INTERNATIONAL INC.		
☒	HUA YA	ADD: No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: 886-3-327-3456 FAX: 886-3-318-0055 FCC Designation Number: TW1093
☐	DONG HU	ADD: No. 3, Ln. 238, Kangle St., Neihu Dist., Taipei City, Taiwan (R.O.C.) TEL: 886-2-2631-5551 FAX: 886-2-2631-9740 FCC Designation Number: TW1094
☐	LIN KOU	ADD: No. 30-2, Dingfu Vil., Linkou Dist., New Taipei City, Taiwan (R.O.C.) TEL: 886-2-2601-1640 FAX: 886-2-2601-1695 FCC Designation Number: TW1095

Test Items	Test Site No.	Test Engineer	Test Environment		Test Date	Remark
			temp °C	hum %		
Conducted Emissions of Powerline	CO04-HY	Teddy	22	56	07/Sep/2017	-
Radiated Emissions below 1GHz	03CH04-HY	Alan	24	55	08/Sep/2017	-

3.2. Test Standards

Test items	Test Standards and Test Procedures
Radiated and Conducted Emissions	ANSI C63.4:2014 with FCC Method 47 CFR Part 15, Subpart B, Class B Digital Device

3.3. Test Voltage/Frequencies

Power Supply Type	Voltage/Frequencies
AC Power Supply	120V / 60Hz

3.4. Test Distance and Frequency Range Investigated

Test Items	Frequency Range	Remark
Powerline Conducted Emissions	150 kHz to 30 MHz	-
Radiated Emissions (below 1GHz)	30 MHz to 1,000 MHz	Measurement distance is 3 m.

3.5. Operating Condition

- Full system.

3.6. Labelling requirements

The devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3.7. User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

4. Conducted Emissions Measurement

Conducted Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 7.
The EUT is which satisfies the Class B disturbance limits.

4.1. Limit

Limits for conducted disturbance at the mains ports of class B			
Frequency range MHz	**Coupling device**	**Detector type / bandwidth**	**Class B limits** dB(μV)
0,15 – 0,5	AMN	Quasi-peak / 9 kHz	66 - 56
0,5 – 5			56
5 – 30			60
0,15 – 0,5	AMN	Average / 9 kHz	56 - 46
0,5 – 5			46
5 – 30			50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.			

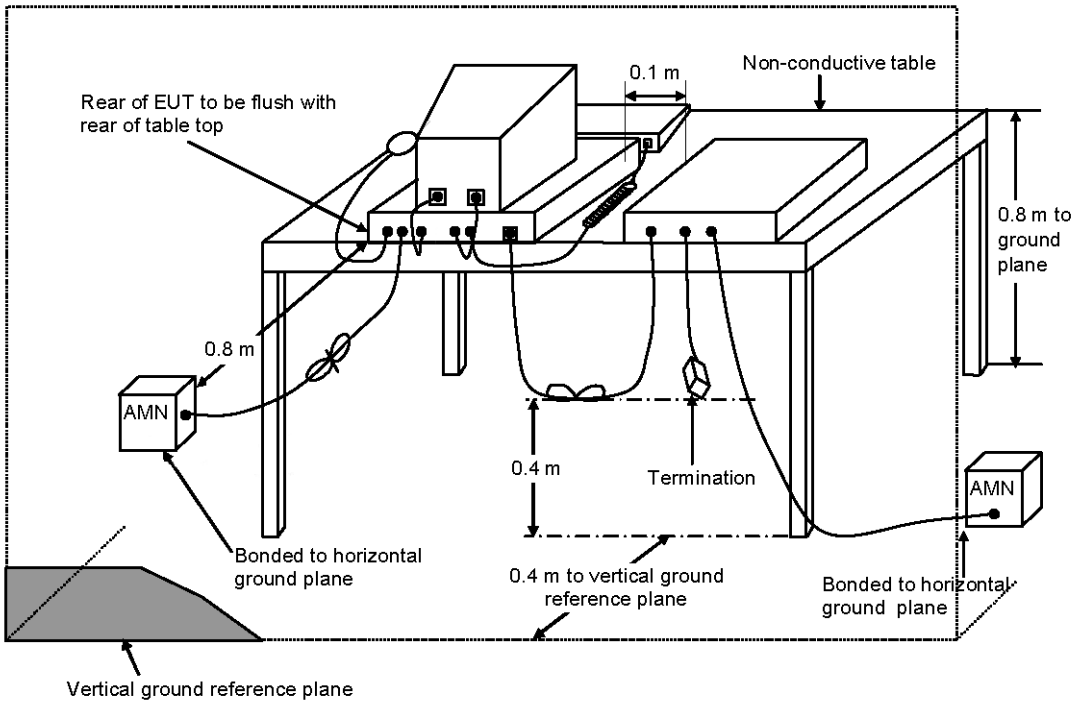
4.2. Test Procedures

a). The EUT was warmed up for 15 minutes before testing started.
b). The EUT was placed on a desk 0.8 meter height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meter from any other grounded conducting surface.
c). Connect EUT to the power mains through a line impedance stabilization network (LISN).
d). All the support units are connect to the other LISN.
e). The LISN provides 50 ohm, coupling impedance for the measuring instrument.
f). The FCC states that a 50 ohm, 50 microhenry LISN should be used.
g). Both sides of AC line were checked for maximum conducted interference.
h). The frequency range from 150 kHz to 30 MHz was searched.
i). Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
j). All emissions not reported here are more than 10 dB below the prescribed limit.

4.3. Measurement Results Calculation

The measurand Level is calculated using:
Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level
For example at 0.3 MHz if the LISN Factor is 10.48 dB, the cable loss is 0.10 dB, the measured voltage is 36.39 dBμV, the signal strength would be calculated:
Corrected Reading (dBμV) = 10.48 dB + 0.10 dB + 36.39 dBμV = 46.97 dBμV

4.4. Typical Test Setup Layout

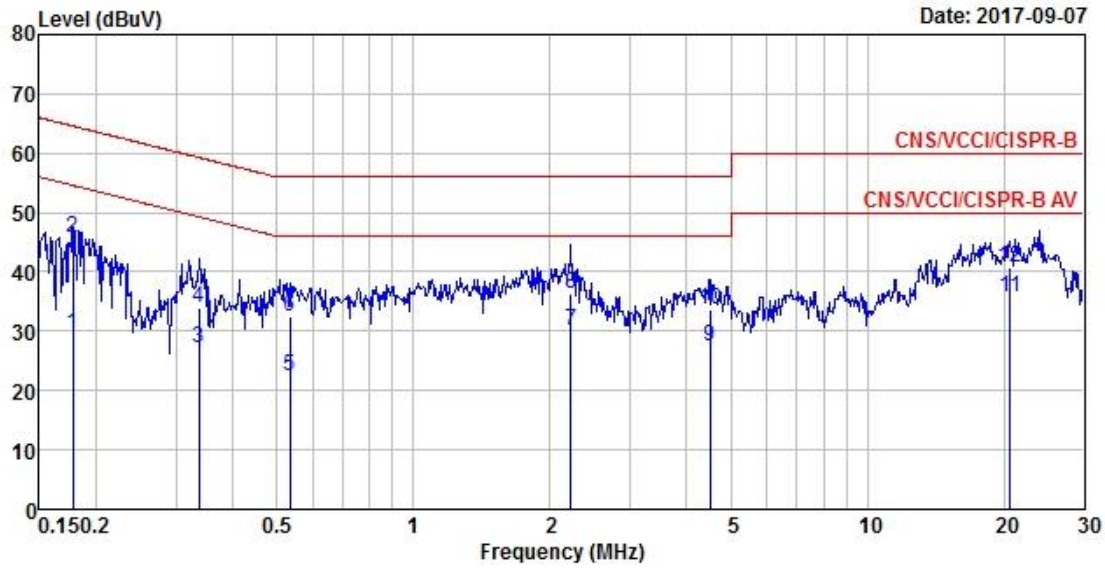


a). AMN is 80 cm from the EUT and at least 80 cm from other units and other metal planes.
b). EUT is connected to one artificial mains network (AMN).
c). All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
d). Rear of EUT to be flushed with rear of table top.
e). Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
f). If cables, which hang closer than 40 cm to the horizontal metal ground plane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
g). Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
h). Cables of hand operated devices, such as keyboards, mice, etc. shall be placed as for normal usage.

4.5. Test Result

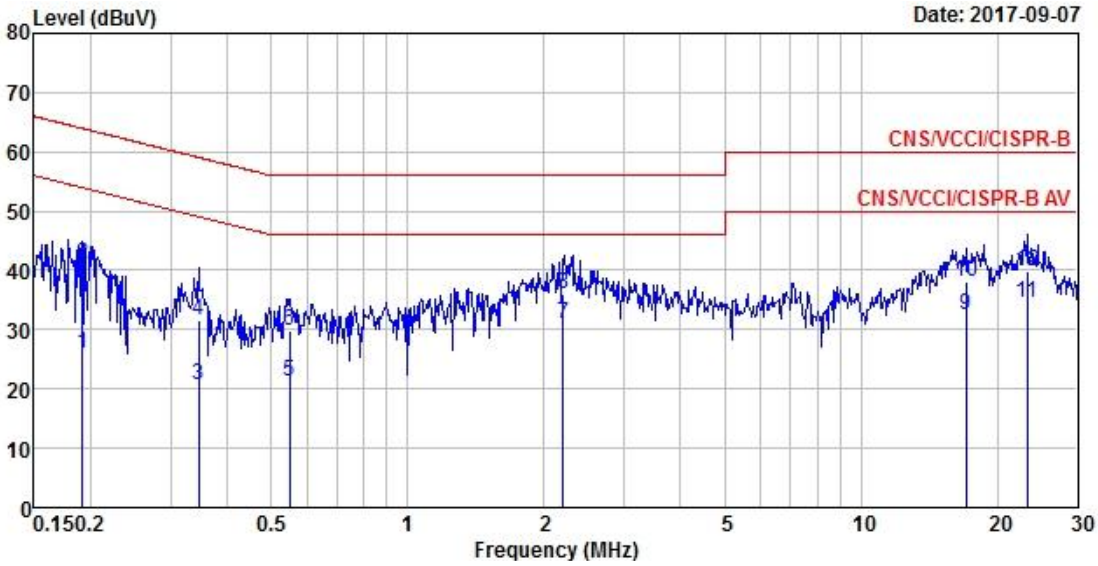
Test Mode	Mode 1		
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17772	29.39	-25.20	54.59	19.47	9.65	0.27	Average
2	0.17772	45.90	-18.69	64.59	35.98	9.65	0.27	QP
3	0.33740	27.10	-22.17	49.27	17.28	9.67	0.15	Average
4	0.33740	34.09	-25.18	59.27	24.27	9.67	0.15	QP
5	0.53498	22.32	-23.68	46.00	12.56	9.66	0.10	Average
6	0.53498	32.51	-23.49	56.00	22.75	9.66	0.10	QP
7	2.22493	30.03	-15.97	46.00	19.97	9.79	0.27	Average
8	2.22493	36.18	-19.82	56.00	26.12	9.79	0.27	QP
9	4.50145	27.56	-18.44	46.00	17.68	9.77	0.11	Average
10	4.50145	33.59	-22.41	56.00	23.71	9.77	0.11	QP
11 MAX	20.59435	35.66	-14.34	50.00	25.56	9.90	0.20	Average
12	20.59435	40.70	-19.30	60.00	30.60	9.90	0.20	QP

Neutral



		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.19140	25.96	-28.02	53.98	16.01	9.66	0.29	Average
2		0.19140	41.08	-22.90	63.98	31.13	9.66	0.29	QP
3		0.34646	20.71	-28.34	49.05	10.93	9.64	0.14	Average
4		0.34646	31.68	-27.37	59.05	21.90	9.64	0.14	QP
5		0.54934	21.27	-24.73	46.00	11.55	9.62	0.10	Average
6		0.54934	29.90	-26.10	56.00	20.18	9.62	0.10	QP
7	MAX	2.20147	31.14	-14.86	46.00	21.21	9.66	0.27	Average
8		2.20147	36.14	-19.86	56.00	26.21	9.66	0.27	QP
9		17.01810	32.34	-17.66	50.00	22.29	9.85	0.20	Average
10		17.01810	38.21	-21.79	60.00	28.16	9.85	0.20	QP
11		23.26333	34.68	-15.32	50.00	24.60	9.88	0.20	Average
12		23.26333	39.92	-20.08	60.00	29.84	9.88	0.20	QP

5. Radiated Emissions Measurement

Radiated Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 8.
The EUT is which satisfies the Class B disturbance limits.

5.1. Radiated Emission below 1GHz

5.1.1. Limit

radiated emissions at frequencies up to 1 GHz for Class B equipment				
Frequency range MHz	**Measurement**		**Class B limits**	
	Distance (m)	**Detector type / bandwidth**	**μV/m**	**dB(μV/m)**
30 – 88	3	Quasi Peak / 120 kHz	100	40
88 – 216			150	43.5
216 – 960			200	46
Above 960			500	54
Note: dB(μV/m) = 20 log μV/m				

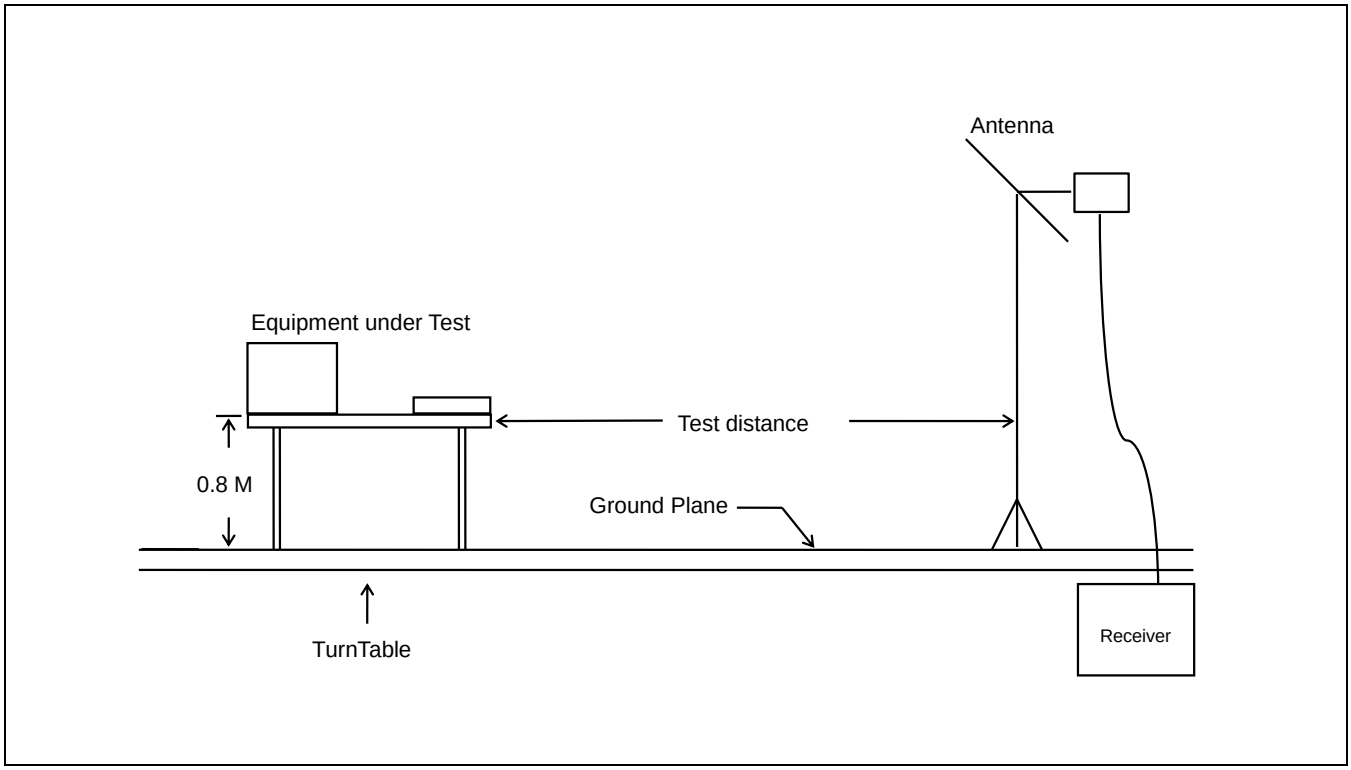
5.1.2. Test Procedures

a). The EUT was placed on a rotatable table top 0.8 meter above ground.
b). The EUT was set 3 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
c). The table was rotated 360 degrees to determine the position of the highest radiation.
d). The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e). For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f). Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
g). If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

5.1.3. Measurement Results Calculation

The measurand Level is calculated using:
Corrected Reading (dBμV/m) = Antenna Factor + Cable Loss + Read Level – Preamp Factor
For example at 125 MHz if the Antenna Factor is 17.24 dB/m, the cable loss is 1.20 dB, the measured voltage is 35.80 dBμV and the Preamp Factor is 27.18 dB, the signal strength would be calculated:
Corrected Reading (dBμV/m) = 17.24 dB/m + 1.20 dB + 35.80 dBμV - 27.18 dB = 27.06 dBμV/m
Note: If a hybrid antenna is used, the antenna factor shell be the sum of the Antenna Factor + Attenuator Factor.

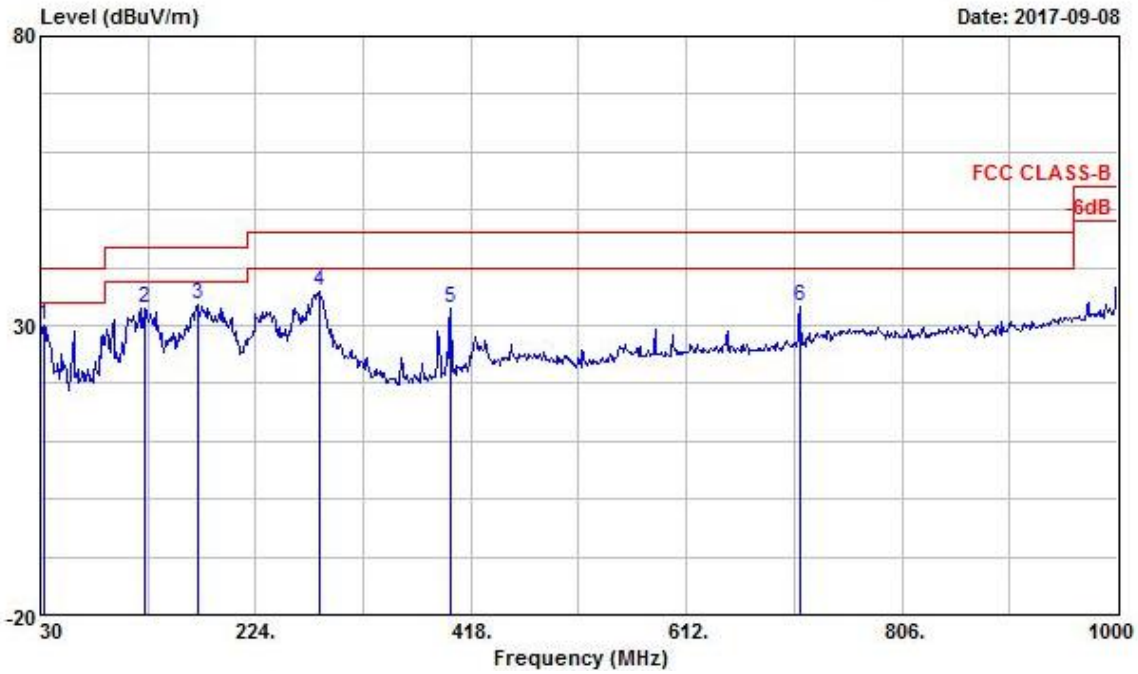
5.1.4. Typical Test Setup Layout



5.1.5. Test Result

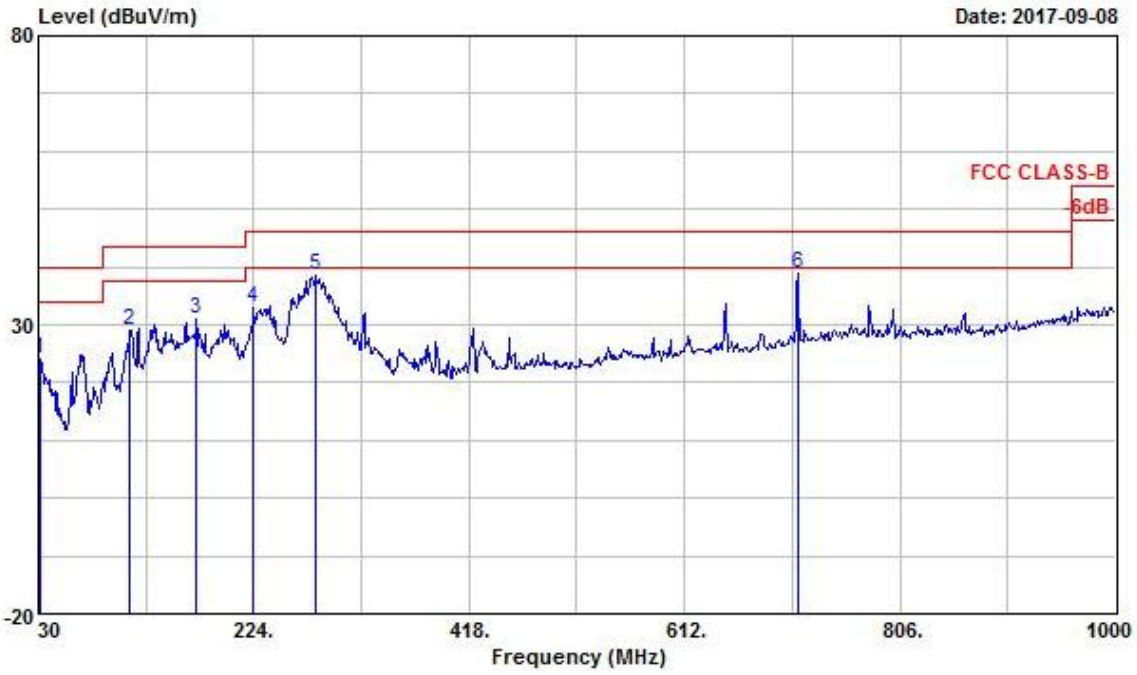
Test mode	Mode 1		
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	32.970	30.07	-9.93	40.00	36.68	23.15	30.31	0.56	---	---	Peak
2	123.690	32.96	-10.54	43.50	44.21	17.97	30.13	0.91	---	---	Peak
3	172.020	33.56	-9.94	43.50	46.85	15.59	29.95	1.07	---	---	Peak
4	281.100	35.78	-10.22	46.00	45.26	18.70	29.55	1.37	---	---	Peak
5	399.400	32.84	-13.16	46.00	39.34	21.95	30.07	1.62	---	---	Peak
6	713.700	33.45	-12.55	46.00	34.47	27.21	30.45	2.22	---	---	Peak

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.620	24.04	-15.96	40.00	30.21	23.59	30.31	0.55	---	---	Peak
2	112.620	28.98	-14.52	43.50	41.15	17.12	30.16	0.87	---	---	Peak
3	172.290	31.04	-12.46	43.50	44.39	15.53	29.95	1.07	---	---	Peak
4	223.860	33.12	-12.88	46.00	45.91	15.74	29.76	1.23	---	---	Peak
5	280.020	38.40	-7.60	46.00	47.92	18.67	29.56	1.37	---	---	Peak
6 @	713.700	38.97	-7.03	46.00	39.99	27.21	30.45	2.22	100	200	Peak

5.2. Radiated Emission above 1GHz

The highest frequency of the internal sources of the EUT is less than 108MHz, so the measurement shall only be made up to 1GHz.

6. Uncertainty of Test Site

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

6.1. Emission Test Measurement Uncertainty

Test Items	Test Site No.	U_{LAB}	U_{CISPR}
Conducted Emissions	CO04-HY	± 2.2 dB	3.4 dB
Radiated Emissions below 1GHz	03CH04-HY	± 2.6 dB	6.3 dB

7. List of Measuring Equipment Used

Conducted Emission - Test Date: 07/Sep/2017

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESR3	102051	9KHz ~ 3.6GHz	29/Apr/2017	Conduction (CO04-HY)
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	15/Nov/2016	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	24/Oct/2016	Conduction (CO04-HY)
Impuls Begrenzer Pulse Limiter	R&S	ESH3-Z2	100921	10 kHz ~ 30 MHz	20/Oct/2016	Conduction (CO04-HY)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.

Radiated Emission below 1GHz - Test Date: 08/Sep/2017

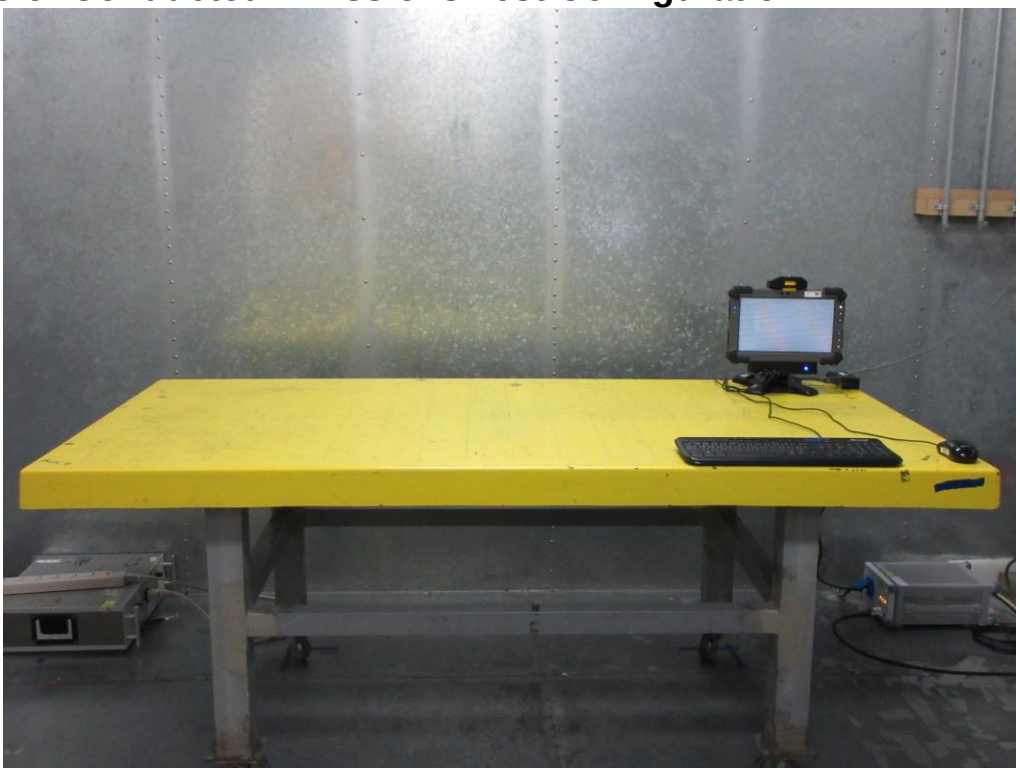
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH04-HY	30 MHz ~ 1 GHz 3m	16/Oct/2016	Radiation (03CH04-HY)
Amplifier	Agilent	8447D	2944A09073	0.1 MHz ~ 1.3 GHz	21/Dec/2016	Radiation (03CH04-HY)
Receiver	R&S	ESU-26	100422/026	20Hz ~ 26.5GHz	21/Sep/2016	Radiation (03CH04-HY)
Bilog Antenna with 6dB Attenuator	SCHAFFNER & Yi Chang	CBL6111C & MTJ61202	2724 & MTJ6102-06	30 MHz ~ 1 GHz	08/Jul/2017	Radiation (03CH04-HY)
Turn Table	Chaintek	3000	MF7802056	0 ~ 360 degree	NCR	Radiation (03CH04-HY)
Antenna Mast	MF	MF-7802	MF780208163	1 m ~ 4 m	NCR	Radiation (03CH04-HY)
RF Cable-R03m	Suhner Switzerland + RFIDEN	RG223/U +RG8/U	CB025	30 MHz ~ 1 GHz	17/Dec/2016	Radiation (03CH04-HY)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.

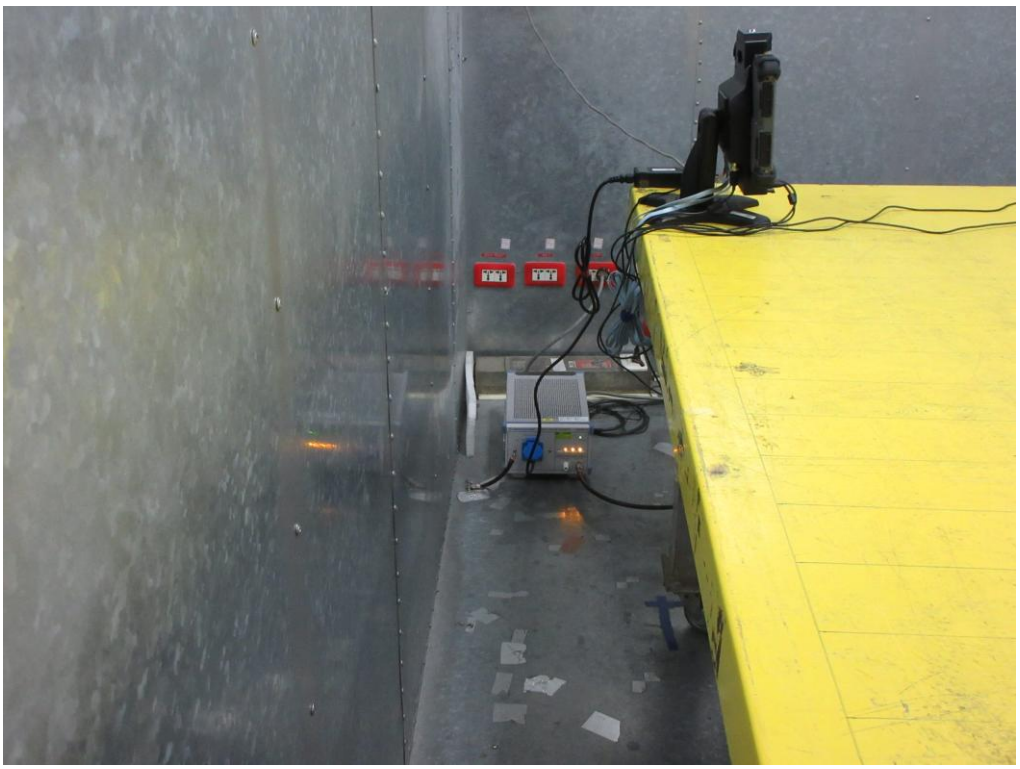
Appendix A. Test Photos

1. Photographs of Conducted Emissions Test Configuration

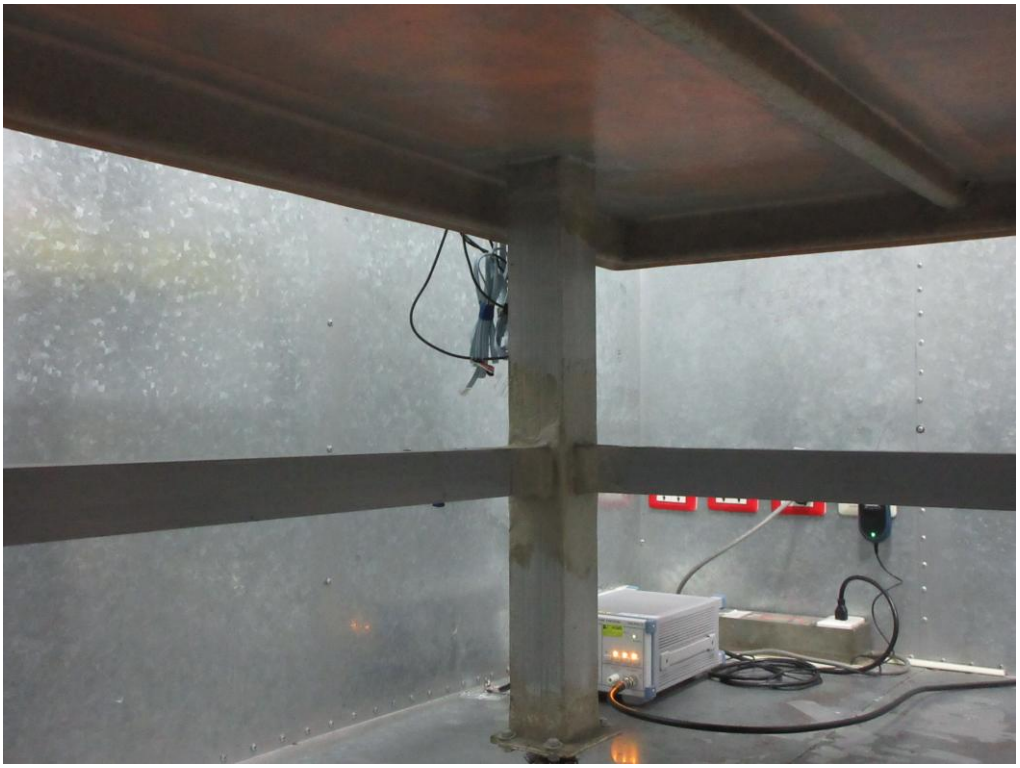
Front view



Rear view



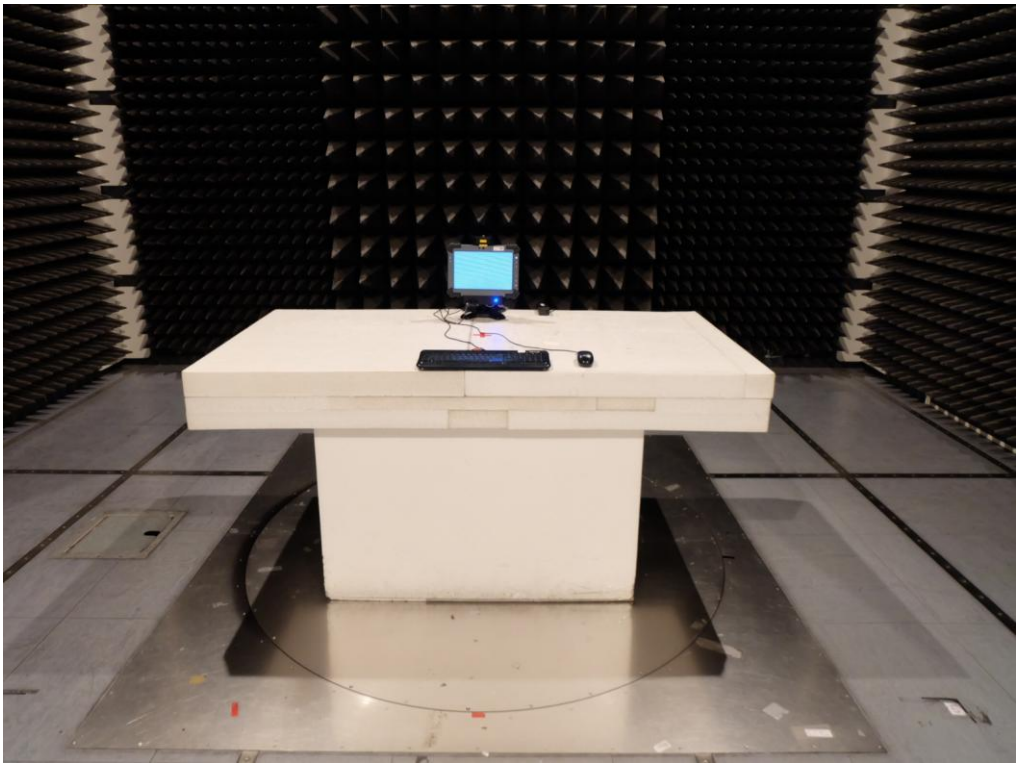
Side view



2. Photographs of Radiated Emissions Test Configuration

For radiated emissions below 1GHz

Front view



Rear view